

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

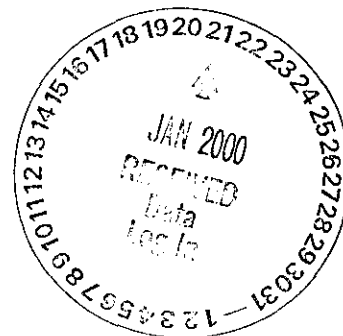
509 375-3131 Telephone
509 375-5590 Fax

0052618

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

January 20, 2000

RECEIVED
FEB 28 2000

Attention: Joan Kessner

EDMC

SAF Number	:	C00-008
Date SDG Closed	:	January 12, 2000
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W02994
Data Deliverable	:	Summary

I. Introduction

On December 29, 1999, one water sample was received at the Quanterra Richland Laboratory (QRL) for chemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

<u>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9D708D10	B0X0J9	WATER	12/29/99

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was: **Chemical Analyses**
Chromium Hex by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W02994 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

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Bechtel Hanford, Inc.
January 20, 2000
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QC results are reported in mg/L.

IV. Comments

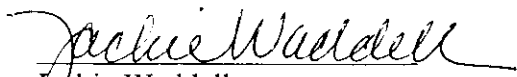
Chemical Analyses

Chromium Hex by EPA method 7196

The LCS, batch blank, sample, sample duplicate (B0X0J9) and sample matrix spike/matrix spike duplicate (B0X0J9) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:


Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02994 / 9454
LAB SAMPLE ID: 9D708D10 MATRIX: WATER
CLIENT ID: B0X0J9 DATE RECEIVED: 12/29/99 2:50:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	7.50E-02		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results: 1

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02994 / 9454
LAB SAMPLE ID: D708D14R MATRIX: WATER
CLIENT ID: B0X0J9 DATE RECEIVED: 12/29/99 2:50:00 P
ORIG LAB SAMPLE ID: 9D708D10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	7.50E-02		N/A	N/A	2.00E-03	mg/L	N/A	EPA7196	7.50E-02	0.00%

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02994 / 9454
LAB SAMPLE ID: D70CG11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02994 / 9454

LAB SAMPLE ID: D70CG12S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	4.99E-01		N/A	N/A	2.00E-03	mg/L	N/A	5.00E-01	99.80%

Number of Results: 1

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02994 / 9454
LAB SAMPLE ID: D708D12W MATRIX: WATER

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.27E-01	N/A	N/A	2.00E-03	mg/L	7.50E-02	5.26E-01	100.19%

Number of Results: 1

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41

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MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02994 / 9454
LAB SAMPLE ID: D708D13W MATRIX: WATER

ANALYTE	SPIKE RESULT*	COUNTING Q ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	5.20E-01	N/A	N/A	2.00E-03	mg/L	7.50E-02	5.26E-01	98.86%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41



Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): D708D Batch: 9364144 Lot: J9L300101				
Lab Sample Numbers or SDG: W02994				
Method/Test/Parameter: CRH6 in water RICHHWC5003 R.3				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			
2. Correlation coefficient within QC limits?	✓			
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?			✓	
2. Were all sample holding times met?	✓			
D. QC Samples				
1. All results for the preparation blank below limits?	✓			
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

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Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted?			✓	
2. Is the correct date and time of analysis shown?	✓			
3. Did the analyst sign and date the front page of the analytical run?	✓			
4. Correct methodology used?	✓			
5. Transcriptions checked?	✓			
6. Calculations checked at minimum frequency?	✓			
7. Units checked?	✓			

Comments on any "No" response:

Analyst: Roxie Ross

Date: 12/30/99

Second-Level Review: Jackie Waddell

Date: 1/18/00

CHAIN OF CUSTODY

[illegible]

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 12/29/99 1450 SG#: W02994
Work Order Number: J9L300101 SAF #: CDD-008
Shipping Container ID: SML 212 Chain of Custody #: CDD-008-9

1. Custody Seals on shipping container intact? Yes [☒] No [☐]
2. Custody Seals dated and signed? Yes [☒] No [☐]
3. Chain-of-Custody record present? Yes [☒] No [☐]
4. Cooler temperature NA
5. Vermiculite/packing materials is Wet [☐] Dry [☒]
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? Yes [☐] No [☒]

8. Samples have:

~~tape~~
custody seals

~~hazard labels~~
appropriate sample labels

9. Samples are:

in good condition
broken

leaking
have air bubbles

10. Where any anomalies identified in sample receipt? Yes [☐] No [☒]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Bm/K Date: 12-29-99

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

03-Jan-00

③ 1/4/99

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B	
PGW B0WWX4D6W6L		1/3/99 9:54:00 AM	QUAD21B	1/3/2000 4:38:14 PM	B0WWX4D6W6L	30	10	0.243333333	59	1.106666667	
D6W6L	LIQUID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	9	0.09	86	0.86	
Anl Date: 1/3/00	Tot Sa, Alq: 9.00E+00	1.00E+01	Alp: (Dpm/ 7.37E-01	(uCi/ 2.99E-04	(pCi/ 3.32E+01	+ 2.5E+01	CAT	7.5E-01	Lab		
Ppt mg: 1.4	Units: L	ml	Bet: Alq: 2.00E+00	Sa: 8.10E-04	Ljg: 8.99E+01	+ 2.4E+01	I	5.6E-01	Alq	Ljg	
PGW B0X0J1D715L		1/3/99 9:54:00 AM	QUAD21D	1/3/2000 4:38:14 PM	B0X0J1D715L	30	3	-0.05	45	0.69	
D715L	LIQUID		Bkg:	1/3/2000 1:39:02 PM	BKG	100	15	0.15	81	0.81	
Anl Date: 1/3/00	Tot Sa, Alq: 5.00E-01	1.00E+01	Alp: (Dpm/ -1.79E-01	(uCi/ -4.04E-06	(pCi/ -8.07E+00	+ 2.3E+01	CAT	5.0E-01	Lab		
Ppt mg: 2.6	Units: L	ml	Bet: Alq: 1.39E+00	Sa: 3.13E-05	Ljg: 6.26E+01	+ 2.2E+01	I	8.0E-01	Alq	Ljg	
PGW B0X0J9D708D		1/3/99 9:54:00 AM	QUAD22B	1/3/2000 4:38:17 PM	B0X0J9D708D	30	16	0.453333333	100	2.023333333	
D708D	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	8	0.08	131	1.31	
Anl Date: 1/3/00	Tot Sa, Alq: 5.00E-01	1.00E+01	Alp: (Dpm/ 1.39E+00	(uCi/ 3.12E-05	(pCi/ 6.24E+01	+ 3.1E+01	CAT	4.0E-01	Lab		
Ppt mg: 4.2	Units: L	ml	Bet: Alq: 3.60E+00	Sa: 8.11E-05	Ljg: 1.62E+02	+ 3.0E+01	I	3.1E-01	Alq	Ljg	
PGW B0X0L1D6W6G		1/3/99 9:54:00 AM	QUAD22C	1/3/2000 4:38:17 PM	B0X0L1D6W6G	30	5	0.016666667	31	-0.0166667	
D6W6G	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	15	0.15	105	1.05	
Anl Date: 1/3/00	Tot Sa, Alq: 1.00E+00	1.00E+01	Alp: (Dpm/ 5.18E-02	(uCi/ 2.33E-06	(pCi/ 2.33E+00	+ 2.4E+01	CAT	1.1E+01	Lab		
Ppt mg: 3.1	Units: L	ml	Bet: Alq: -4.16E-02	Sa: -1.87E-06	Ljg: -1.87E+00	+ 1.9E+01	I	1.0E+00	Alq	Ljg	
PGW B0X0M2D70AH		1/3/99 9:54:00 AM	QUAD22D	1/3/2000 4:38:17 PM	B0X0M2D70AH	30	25	0.693333333	99	2.08	
D70AH	LIQUID		Bkg:	1/3/2000 1:39:05 PM	BKG	100	14	0.14	122	1.22	
Anl Date: 1/3/00	Tot Sa, Alq: 3.00E+00	1.00E+01	Alp: (Dpm/ 2.05E+00	(uCi/ 2.76E-04	(pCi/ 9.21E+01	+ 3.1E+01	CAT	2.7E-01	Lab		
Ppt mg: 1.8	Units: L	ml	Bet: Alq: 3.51E+00	Sa: 4.74E-04	Ljg: 1.58E+02	+ 2.9E+01	I	3.2E-01	Alq	Ljg	
PGW B0X0M4D7165		1/3/99 9:54:00 AM	QUAD23B	1/3/2000 4:38:15 PM	B0X0M4D7165	30	17	0.466666667	51	0.85	
D7165	LIQUID		Bkg:	1/3/2000 1:39:08 PM	BKG	100	10	0.1	85	0.85	
Anl Date: 1/3/00	Tot Sa, Alq: 6.00E+00	1.00E+01	Alp: (Dpm/ 1.43E+00	(uCi/ 3.88E-04	(pCi/ 6.46E+01	+ 2.6E+01	CAT	3.9E-01	Lab		
Ppt mg: 2.9	Units: L	ml	Bet: Alq: 1.33E+00	Sa: 3.60E-04	Ljg: 6.00E+01	+ 2.2E+01	I	8.3E-01	Alq	Ljg	

0014

03-Jan-00

Quanterra Environment Services, SCP V2.03

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COC Signature Page

Lot or Batch #:	Initials/Date	Procedure #
9364144		
Released By	12/30/99 KPA	Richr10009
Received	12/30/99 (B)	RICHWC5003 R3
Released By	Jul for RR 12/30/99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

RC-131, Rev. I, 6/99

RQC050

Quanterra Incorporated
WET CHEM BATCHSHEET
RichlandRun Date: 12/30/99
Time: 8:27:19

PRODUCTION FIGURES - WET CHEM

<u>TOTAL</u> <u>NUMBER</u>	<u>SAMPLE</u> <u>NUMBER</u>	<u>QC</u>	<u>RE-RUN</u> <u>MATRIX</u>	<u>RE-RUN</u> <u>OTHER</u>	<u>MISC</u> <u>NUMBER</u>	<u>TOTAL</u> <u>HOURS</u>	<u>EXPANDED</u> <u>DELIVERABLE</u>
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METHOD: EA Hexavalent Chromium
QC BATCH #: 9364144
PREP DATE: 12/30/99
USER: ROSSR6A)
INITIALS:
PREP
ANALDATA ENTRY:
INITIALS
DATE

<u>Work Order</u>	<u>Lab Number</u>	<u>Structured</u> <u>Analysis</u>	<u>Exp.</u> <u>Del.</u>	<u>Analysis</u> <u>Date</u>	<u>Sample ID:</u>
D70CG-1-01	J-9L300000-144-B	XX I 88 EA 5I			INTRA-LAB BLANK
D70CG-1-02	J-9L300000-144-C	XX I 88 EA 5I			INTRA-LAB CHECK
D708D-1-01	J-9L300101-001	XX I 88 EA 5I			BOX0J9
D708D-1-03	J-9L300101-001-D	XX I 88 EA 5I			BOX0J9
D708D-1-02	J-9L300101-001-S	XX I 88 EA 5I			BOX0J9
D708D-1-04	J-9L300101-001-X	XX I 88 EA 5I			BOX0J9 DUP

Control Limits

(85-115)

(85-115)

(85-115)

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